REMARKS

Claims 1-5, 7-11, 13-17, 19-21, and 23-24 are pending in the application.

Claims 1-5, 7-11, 13-17, 19-21, and 23-24 stand rejected.

Rejection of Claims under 35 U.S.C. §103

Claims 1-5, 7-8, 11, 13-21, and 23-24 are rejected under 35 U.S.C. § 103(a) as being obvious over Huras (U.S. Patent Publication 2005/0278393) (hereinafter referred to as "Huras") in view of Shih et al. (U.S. Patent No. 6,615,223) (hereinafter referred to as "Shih"). Applicant respectfully traverses this rejection.

With respect to claim 1, the cited art fails to teach or suggest "determining that a change occurred to data in a first region of a first plurality of regions of a first volume." The Examiner relies upon paragraph 36 of Huras to teach this feature. Final Office Action, pp. 2-3. The cited portion of Huras recites:

> Each log file 107 can contain many log records. Each log record records a transaction that interacted with the various tablespaces contained in the database. Typically, roll forward 106 can comprise processing selected log files in a serial manner, such as starting from one log file (e.g., log file #10) and onwards to a succeeding log file (e.g., log file #14) in a discriminatory manner as further described below.

Thus, the log file in Huras records transactions that affect tablespaces in a database, not changes that affect data in a particular region of a volume. Databases are clearly not the same as volumes, and thus the transaction described in Huras is clearly different than the change described in claim 1.

The cited art also fails to teach or suggest that "the change resulted from a restore operation," as recited in claim 1. The Examiner states that paragraphs 25 and 35 of Huras teach that the change (which the Examiner equates with the transaction that affects a tablespace and is recorded in a log file) resulted from a restore operation. Final Office Action, p. 3. However, paragraph 25 merely notes that a database management system can include a backup version of a tablespace.

Paragraph 30 states: "A database management system (see FIG. 2) is used to recover the tablespace with minimal errors by restoring a backup version of the tablespace (indicated as backup 104), from Monday. The database management system obtains the backup 104 of the tablespace and begins a roll forward operation, roll forward 106 of selected log files 107 to the beginning of Tuesday." Accordingly, the cited portions of Huras teach that a tablespace can be recovered by first restoring the tablespace from backup and then applying transactions recorded in selected log files to the tablespace. These selected log files store transactions that affected the tablespace between the time that the backup version was created and the desired restore time. *See also* Huras, paragraph 69.

The cited portions of Huras neither teach nor suggest that changes resulting from restoring a tablespace from backup be recorded in the log file (i.e., Huras suggests no need to record the changes that occur during the restore operation to the log file). Instead, Huras simply notes that (1) transactions (which in no way appear to be equivalent to changes that result from a restore operation) that affect a tablespace can be recorded in a log file and (2) after a restore, the already-created log files can be used to further recover the tablespace.

Using the already-created log file during a recovery operation is quite clearly not the same as recording changes that result from the recovery operation in the log file. Additionally, since the log file is being used to modify the tablespace during the recovery process, it seems quite unlikely that the log file would simultaneously be modified to record changes that resulted from the recovery process.

Furthermore, restoring a tablespace from backup would not be expected to involve the type of transactions that are recorded in the log file. Given that the log files appear to only record transactions (as opposed to any other type of change affecting the information in a tablespace), no disclosure exists in the cited portion of Huras that shows, teaches, or suggests that Huras's log file could even record a change that resulted from a restore operation.

Accordingly, the cited portion of Huras does not teach or suggest that the "transaction" recorded in the log file (and equated with the "change" of claim 1) resulted from a restore operation. Shih, which is not relied upon to teach this feature of claim 1, also fails to teach or suggest "the change resulted from a restore operation."

Furthermore, the cited art does not teach or suggest: "in response to determining that the change occurred, updating information identifying a set of regions designated for replication to a second volume, wherein subsequent to the updating the information, the first region is included in the set of regions designated for replication to the second volume," as recited in claim 1.

The Examiner equates the log files in Huras with the information in claim 1. Final Office Action, p. 3. However, as noted above, the log files record transactions that can be replayed in order to recover a tablespace. The cited portions fail to teach or suggest using the log files in the act of replicating data from one volume to another. Instead, these portions of Huras make no mention of replication at all.

Thus, while Huras teaches that the log files can be used in recovery, Huras clearly does not teach or suggest using the log files in replication. Shih also fails to teach or suggest that log files such as those described in Huras would be useful in replication. Accordingly, the cited art also fails to teach or suggest "updating information identifying a set of regions designated for replication" in response to detecting a change caused by a restore operation.
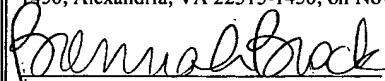
For at least the foregoing reasons, claim 1 is patentable over the cited art. Claims 3-5, 7-8, 11, 13-21, and 23-24 are patentable over the cited art for similar reasons.
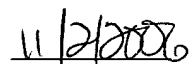
Claims 9 and 10 are rejected under 35 U.S.C. § 103(a) as being obvious over Huras in view of Shih in further view of Lomet (U.S. Pat. 6,578,041). These claims are patentable over the cited art for at least the foregoing reasons presented above with respect to claim 1.
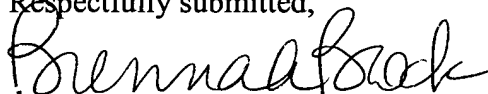
CONCLUSION

In view of the amendments and remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5087.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on November 2, 2006.

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